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ABSTRACT

The Canadian Government has established the Educational Technology Program to encourage the effective utilization of technology to meet educational needs. The success of this program at the federal-provincial level underlies its timeliness and importance. In the area of computer resource sharing, the federal government is aware of the diversity among the provinces in terms of their needs, resources, priorities and stages of development. Thus, each province is being approached to determine to what extent it wishes to work jointly with the federal government in this or other areas of educational technology. (WCM)

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THE SHARING OF CANADIAN EDUCATIONAL COMPUTING RESOURCES

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ABSTRACT

Description of Federal Government Educational Technology Program, and initiatives to stimulate the sharing of computer resources among Canadian universities and other post-secondary institutions, through joint federal-provincial programs.

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1. *INTRODUCTION*

This paper traces the history of Canadian Federal Government activities in stimulating the sharing of educational computing resources. Three major activities have been involved, and while these were once in parallel, they have now converged under the auspices of the Educational Technology Program.

The first of these activities, which began in 1970, was CANUNET - the CANadian University computer NETwork program. This was undertaken in two phases: the first concerned with network design and innovation based on using packet switched technology, and the second concerned with subsidy of communications costs.

The second activity consisted of the Canadian Computer/Communications Task Force which produced the report *Branching Out* in 1972. A Federal Government Interdepartmental Committee on Computer/Communications was then established, with a number of Working Groups: Working Group 19 was formed specifically to study CANUNET. With the incorporation of CANUNET into the Educational Technology Program, this Working Group has now been disbanded.

The third activity, whose timing paralleled these, began with an Interdepartmental Committee whose recommendations led to the creation by the Federal Government of the Educational Technology Program. This Program assists federal and provincial authorities by providing plans, information, and advice on educational technology.

Under the Educational Technology Program a number of joint federal-provincial study programs have now formalized and are under way. One such study program, to encourage computer resource sharing at the post-secondary level, has recently been developed jointly by the Federal Government and the four Atlantic Provinces.

2. CANUNET HISTORY

The first initiative of the Federal Government to stimulate educational computer resource sharing was CANUNET - the CANadian University computer NETwork program. Its history can be divided into two major periods - the first concerned with network design and innovation, and the second concerned with subsidy of communications costs.

In view of the growing interest in linking university computers on several campusses, EDUCOM surveyed American and Canadian universities in 1970 regarding their possible interest in joining ARPANET. The Department of Communications (DOC) was then urged to establish a Canadian university computer network, so that Canadian universities could develop the necessary expertise and experience in this new and important field. Under the leadership of Dr. John de Mercado, a number of studies were carried out to design a suitable packet switched network to interconnect computer facilities of Canadian universities through a national network which would be flexible and transparent to users. [1,2,3]

Following these network design studies, a new approach to CANUNET began to emerge in 1973 when it became apparent that a viable design for a store and forward packet switched network had evolved from ARPANET. This new approach considered possible forms of federal funding of inter-university

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1. Canunet Advisory Committee, "A Proposal for a Canadian University Computer Network (CANUNET)", Université du Québec, March 1972.
2. J. de Mercado, R. Guindon, J. Da Silva and M. Kadoch, "The Canadian Universities Computer Network Topological Considerations", First International Conference on Computer Communications, Washington, D.C. October 1972.
3. C.D. Shepard, "The CANUNET Project - A Progress Report", CRC Technical Note No. 643, Department of Communications, Ottawa, November 1972.

communications costs, to stimulate computer resource sharing at the university level.[4] Under this approach, CANUNET would be realized in two steps: the first would encourage computer resource sharing by alleviating the communications cost component, while the second would be a long range program.

3. *INTERDEPARTMENTAL COMMITTEE ON COMPUTER/COMMUNICATIONS*

While these CANUNET studies were taking place, the Federal Government had established the Canadian Computer/Communications Task Force in 1970 to provide advice on policy matters in the rapidly evolving field of computer communications. The work of the Task Force, led by Dr. Hans von Baeyer, culminated in its publication of the report *Branching Out*[5] in 1972.

On the basis of the Task Force's recommendations, the Federal Government then established an Interdepartmental Committee on Computer/Communications. This Committee in turn set up a number of Working Groups, and in particular Working Group 19 was formed to examine policy and other matters related to the CANUNET program.

4. *EDUCATIONAL TECHNOLOGY PROGRAM*

In parallel with these activities, the Federal Government had established an Interdepartmental Committee on Educational Broadcasting in 1969

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4. Mrs. E. Payne, "On the Need for Computer/Communications in Canada: Proposed CANUNET Program", Department of Communications, Ottawa, October 1973.
5. Canadian Computer/Communications Task Force, Branching Out, Department of Communications, Ottawa, May 1972.

to prepare recommendations on what steps should be taken to ensure that technology used in support of education would be cost-beneficial and in the national interest. This Committee's report documented the rising costs of education, the problems and opportunities presented by new electronic technologies, the growing disparities in the capability of different regions to take advantage of these technologies, and the need for educators and technological specialists to work together to ensure that these technologies are effectively employed.

On the basis of this Committee's recommendations, the Federal Government approved the Educational Technology Program in 1972; the Program was subsequently endorsed by the Council of Provincial Ministers of Education.

The Educational Technology Program, managed by the DOC's Educational Technology Branch led by Dr. John de Mercado, is designed to assist federal and provincial authorities by providing plans, information and advice on educational technology.[6] The Program is also concerned with the development of national standards, and with ensuring that Canadian needs for educational technology can be met where possible by Canadian industry.

The operations of the Educational Technology Program can be categorized into four activity areas: federal-provincial programs, inter-departmental programs, national development programs, and liaison activities. Under the first area come a number of joint federal-provincial study programs.

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6. Educational Technology Branch, "Educational Technology Program: An Overview", Educational Technology Branch, Department of Communications, Ottawa, 1 October 1974.

These include:

- *Educational Technology Program for Nova Scotia*, with the aim of developing a long term plan to enhance the educational process in Nova Scotia through the cost-effective application of educational technology.[7]
- *Programme for the Sharing of Computer Resources in the Atlantic Universities*, with the aim of encouraging the most effective use of present and potential computer resources available to the Atlantic universities and other post-secondary institutions.[8]
- *Program to Study Educational Computing in Newfoundland*, with the aim of studying the current usage and future potential of educational computing in Newfoundland, as an input to the Newfoundland Task Force on Computers and Computer Communications.[9]

National development programs are underway in a number of areas, notably information dissemination, standardization, testing, evaluation, industrial development, and computer aided learning.

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7. Governments of Canada and Nova Scotia, "An Educational Technology Program for Nova Scotia (A Joint Proposal)", Educational Technology Branch, Department of Communications, Ottawa, 6 March 1974.
8. Governments of Canada, New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island, and Association of Atlantic Universities, "A Programme for the Sharing of Computer Resources in the Atlantic Universities (A Joint Proposal)", Educational Technology Branch, Department of Communications, Ottawa, 22 July 1974.
9. Governments of Canada and Newfoundland, "A Program to Study Educational Computing in Newfoundland (A Joint Proposal)", Educational Technology Branch, Department of Communications, Ottawa, 3 October 1974.

5. INCORPORATION OF CANUNET WITHIN EDUCATIONAL TECHNOLOGY PROGRAM

The Educational Technology Program is the vehicle by which the Federal Government deals with the Provinces on all matters related to educational technology. It is thus logical for CANUNET activities to be handled through the appropriate mechanisms that have been developed between the Federal and Provincial Governments in this field.

It was therefore decided, in July 1974, to incorporate all CANUNET activities within the Educational Technology Program. Since Federal Government activities concerned with computer resource sharing at the university level are now included within the Educational Technology Program, CANUNET no longer exists as a separate program; the CANUNET Working Group 19 has therefore been disbanded.

6. PROGRAMME FOR THE SHARING OF COMPUTER RESOURCES IN THE ATLANTIC UNIVERSITIES

One CANUNET-type activity within the Educational Technology Program is the *Programme for the Sharing of Computer Resources in the Atlantic Universities*, a joint study to encourage the most effective use of computer resources available to the Atlantic universities and other post-secondary institutions. This joint program, which involves the Federal Government, the Governments of New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island, the Maritime Provinces Higher Education Commission, and the Association of Atlantic Universities, has recently been agreed to.

The activities to be undertaken in this program are grouped into several phases. The Initial Phase is intended to collect information on needs for and usage of computing resources by the Atlantic universities and

other post-secondary institutions, and to study ways of expanding or improving this usage. This phase will identify existing resources, determine actual and potential shared use of computers (with other educational institutions, with government, and with industry), consider alternate forms of regional cooperation, and study the costs and potential benefits associated with these. This phase will serve as a basis for recommendations and possible decisions concerning the disposition of subsequent phases.

The second phase, if approved, would involve implementation of improvements which could be accomplished without a major increase in resources, and which would not conflict with eventual major developments at the regional level. Such major developments would be planned during the third phase. Following the approval phase, the fifth phase would prepare resources for implementation of any major regional plan approved, and the final phase would involve implementation of this.

7. *CONCLUSION*

Recognizing the important role that technology will play in education, the Federal Government has established the Educational Technology Program to encourage the most effective utilization of technology in meeting educational needs, thereby ensuring that the maximum benefits of this technology are received by all Canadians. The success that this Program is enjoying at the federal-provincial level underlines its timeliness and the importance that all concerned attach to it.

In the area of educational computer resource sharing, the Federal Government is aware that there may be considerable diversity among the Provinces in terms of their needs, resources, priorities and stages of

development. Each Province is thus being approached to determine to what extent it wishes to work jointly with the Federal Government in this or an other area of educational technology.